Mumbai University

Question Paper

[CBSGS – 75:25 Pattern] (April – 2017)

PAPER - IV

ELECTIVE

GEOGRAPHIC INFORMATION SYSTEM

Time: 2 ½ Hours   **Total Marks:** 75

N.B.: **(1)** *All Question are Compulsory.*
    (2) *Make Suitable Assumptions Wherever Necessary And State The Assumptions Made.*
    (3) *Answer To The Same Question Must Be Written Together.*
    (4) *Number To The Right Indicates Marks.*
    (5) *Draw Neat Labeled Diagrams Wherever Necessary.*
    (6) *Use of Non – Programmable Calculator is allowed.*

Q.1   **ATTEMPT ANY TWO QUESTIONS: (10 MARKS)**

(A)   List and explain GIS Operations related to Data Analysis.   **(5)**
(B)   Write a short note on Rasterization.   **(5)**
(C)   Explain the Universe Transverse Mercator (UTM) Grid System. Give suitable example.   **(5)**
(D)   Explain the following terms of Object Based Data Model and give suitable example: **(5)**
       (i) *Aggregation*
       (ii) *Association*

Q.2   **ATTEMPT ANY TWO QUESTIONS: (10 MARKS)**

(A)   What is Root Mean Square Error in Geometric Transformation? Explain the role of RMS error in Affine   **(5)**
Transformation.
(B)   Explain the Map-To-Map and Image-To-Map Transformation.   **(5)**
(C)   List the Common Resampling Methods and explain them.   **(5)**
(D)   Explain the Bilinear Interpolation Resampling Method with suitable example.   **(5)**

Q.3   **ATTEMPT ANY TWO QUESTIONS: (10 MARKS)**

(A)   Explain different types of attribute table.   **(5)**
(B)   Explain File and Hierarchical Database with suitable example.   **(5)**
(C)   Explain: **(5)**
       (i) *Dot Map*
       (ii) *Choropleth Map*
(D)   Explain Relational Database with suitable example.   **(5)**

Aspect

3	2	1	1	1	2	2	2
2	3	3	3	3	3	1	1
1	2	3	3	2	1	1	3
2	2	3	1	1	1	2	2
2	2	2	1	1	1	1	1
3	2	2	1	2	1	2	3
3	2	3	3	3	2	2	3
2	2	2	1	3	1	3	3

Slope

1	2	2	2	1	1	1	2
2	3	1	1	2	2	1	1
1	2	3	3	2	1	1	3
2	2	3	1	1	1	2	2
2	2	2	1	1	3	3	1
3	1	2	1	1	1	2	3
3	1	3	3	1	2	2	3
1	1	1	2	3	2	3	3

Q.4   **ATTEMPT ANY TWO QUESTIONS: (10 MARKS)**

(A)   Explain Buffering.   **(5)**
(B)   List and explain various Overlay Operations based on feature type.   **(5)**
(C)   Explain the following Map Manipulation Operations with example: **(5)**
       (i) *Dissolve*
       (ii) *Append*
(D)   Explain the Reclassification Local Operation of Raster.   **(5)**

[TURN OVER]

Q.5   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)

(A)   Explain Buffering.   **(5)**

(B)   List and explain various Overlay Operations based on feature type.   **(5)**

(C)   Explain the following Map Manipulation Operations with example: **(5)**
    (iii) *Dissolve*
    (iv) *Append*

(D)   Explain the Reclassification Local Operation of Raster.   **(5)**

Q.6   ATTEMPT ANY TWO QUESTIONS: (10 MARKS)

(A)   List and explain the types of Spatial Interpolation.   **(5)**

(B)   Explain the Density Estimation local method.   **(5)**

(C)   What is Kriging? Explain.   **(5)**

(D)   Define following: **(5)**
    (i) *Anisotrophy*
    (ii) *Range*
    (iii) *Nugget*
    (iv) *Partial Sill*
    (v) *Sill*

Q.7   ATTEMPT ANY THREE QUESTIONS: (15 MARKS)

(A)   Explain the different components of GIS.   **(5)**

(B)   Write a short note on metadata.   **(5)**

(C)   Explain normalization with suitable example.   **(5)**

(D)   Write a short note on feature selection by graphic data query.   **(5)**

(E)   Find the zonal mean for the input raster(a) using a zonal raster(b)   **(5)**

2	7	1	1
9	8	5	3
2	8	4	6
1	4	5	3

(a)

1	1	1	2
1	1	1	2
3	3	2	2
3	3	3	3

(b)

(F)   Describe how Semivariance can be used to qualify the spatial dependence in a Data Asset.   **(5)**